Choose Your Own Adventure: Using Interactive Fiction Software to Facilitate the Case Study Instructional Technique in a Postsecondary Agriculture Course

Tyler Granberry
225A J.C. Miller Hall
Louisiana State University
Baton Rouge, LA 70803
(903) 748-2565
tgranb1@lsu.edu

Raegan Ramage
225A J.C. Miller Hall
Louisiana State University
Baton Rouge, LA 70803
(662) 832-8117
rramag1@lsu.edu

Dr. J. Joey Blackburn
129 J.C. Miller Hall
Louisiana State University
Baton Rouge, LA 70803
(225) 578-7892
jjblackburn@lsu.edu

Dr. Jeff S. Kuehny
LSU AgCenter Botanic Gardens
4560 Essen Lane
Baton Rouge, LA 70809
(225) 763-3990 ext. 4
jkuehny@agcenter.lsu.edu

Introduction

The use of case studies as an educational tool, also known as Case Study Technique (CST), has shown promise concerning student performance and perceptions of learning when compared to more traditional educational methods such as discussion and assigned reading (Bonney, 2015). The technique has demonstrated the integration of active learning and bridged gaps between theory and content (Popil, 2011). When surveyed, over 88% of faculty who have used CST in science courses believe the technique provided students a greater perspective and a deeper understanding of the content (Yadav et al., 2007). Further, research has indicated students enrolled in undergraduate agricultural communication courses that employed case studies as part of instruction were more likely to seek information and think critically about agricultural issues (Akins et al., 2019). When looking beyond the benefits of CST, however, the use of case studies does not come without challenges. The unique format, ambiguity, and previous level of exposure to case studies can be challenging for students, while instructors found difficulty with the required skill level for successful delivery, difficulty with assessment, and limitations in their ability to find or create quality case studies (Huynh, Murphrey, Dooley, Strong, & Dooley, 2019; Yadav et al., 2007). In addressing these challenges, gamification of case studies may provide a productive solution. Gamification is defined as "the use of game design elements in non-game contexts" (Deterding, Dixon, Khaled, & Nacke, 2011, p. 10). In the gamification of case studies, interactive fiction and text-based adventure games have elements that can blend naturally with the narrative format of many cases. Innovation of case study design through the use of Quest, a software for the creation of text-based adventure games, allows for gamification of case studies and holds instructional potential for agriculture educators.

How It Works

Quest is an open-source software that allows users to create and upload text-based adventure games. A text-based adventure game is "a software program which presents an artificial environment with which the user must interact in order to solve the problems presented in the game" (Cavallari, Heldberg, & Harper, 1992, p. 173). The software can be accessed via a web browser or downloaded as a free-standing application. Game development and design mechanics in Quest are simple; accompanying tutorials on system operations are provided on the website, creating easy access to operational functions and supporting time-sensitive training for new users. Because the software is designed for text-based adventure games and interactive fiction, case studies straightforwardly format into the software by typing the text on each page. Pictures, videos, and external links can be embedded into the pages of the study, allowing for supplemental content. Branching scenarios can be created using text prompts or clickable links that require students to make choices about the content presented in the study. By allowing students choice in paths of progression through the case study, the outcome is an interactive format that grants students the autonomy to make incorrect or adverse decisions in the case. Through this presentation method, students learn how to think, plan, and reason, simulating real-world decision processes (Naumes & Naumes, 2012). Using ActiveLit, a free service provided by the makers of Quest, instructors can create a self-contained, password-protected webpage to host the interactive case studies they have created. The instructor acts as a site administrator, and students must be provided with login credentials to gain access to the studies posted on the ActiveLit page. A log of student activity when interacting with the case study is generated and available for review by the instructor, providing detailed insight into students' participation within the study.

Results to Date

Currently, Quest and ActiveLit are in use with the HORT 2860 course at Louisiana State University. HORT 2860 is an online crop physiology course facilitated through the Alliance for Cooperative Course Exchange in the Plant Sciences (ACCEPS). For the Spring 2020 semester, 87 students from the University of Arkansas, Mississippi State University, and Louisiana State University are enrolled in the course. The decision to implement this idea within an online course was based upon two primary considerations. First, CST has previously been used in the course, presented through the traditional *read and discuss* format. According to the course instructors, the outcomes of traditional CST were not as effective as initially envisioned in the original course design. Their opinions fell in line with research on the topic, finding that instructors are seeking technological outlets to increase the interactive experience of students participating in CST activities (Huynh et al., 2019) Second, according to Jayaratne and Moore (2017), over 30% of students in online courses preferred case studies as learning activities and 44% stated that they perceived case studies as helpful or very helpful. Case studies have been developed in collaboration with Horticulture faculty, focusing on topics and themes that have provided contextual challenges to students from previous semesters. To date, 90.1% of students have completed the first case study. The process of data collection to measure student perceptions of this format of CST has begun, with an expected completion date at the end of the Spring 2020 semester.

Future Plans

Further development of this innovative idea includes researching the effectiveness of the interactive case study format as an educational tool. This research will include expanding the use of Quest and ActiveLit to other courses within the College of Agriculture. Implementation in other subjects within the college will allow for the exploration of diverse interactive fiction elements that may not logically fit within the horticulture subject area. The creation of files to be used as templates and the development of grading rubrics may assist instructors with the time challenges associated with the institution of new technology (Huynh et al., 2019).

Resources Needed

Quest is provided open-source to the public, and ActiveLit is a free service; therefore, there are no monetary costs associated with using these formats for case study development and delivery. However, the preparation time component of CST is still present in using this format. Time is required to learn how to use the software effectively. Further, time is also required to create, format, upload, and administrate access to the case study to use Quest and ActiveLit successfully. Time spent finding and creating quality cases is identified as a limiting component for instructors using CST, and the use of Quest and ActiveLit is not exempt from this issue (Yadav et al., 2007). Other limiting factors are focused on the limitations of the software itself. The *cost* of the software, in this case, being its fairly simplistic and limited overall capabilities.

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